Citation:

Anderson JW, Major AW. Pulses and lipaemia, short- and long-term effect: potential in the prevention of cardiovascular disease. *Br J Nutr.* 2002 Dec;88 Suppl 3:S263-71.

PubMed ID: 12498626

Study Design:

Meta-analysis

Class:

M - Click here for explanation of classification scheme.

Research Design and Implementation Rating:

⬤ NEUTRAL: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To quantitatively analyze changes in serum lipoprotein levels and body weight resulting from intake of non-soya pulses.

Inclusion Criteria:

- Clinical studies reporting effects of non-soya pulses on serum lipids in past 20 years [article date: 2002]

Exclusion Criteria:

- None specified

Description of Study Protocol:

Literature Search:

- Literature search for reports of clinical trials related to the effects of pulses on serum cholesterol
- Articles cited in research reports also identified and reviewed

Design: Meta-analysis

Blinding used (if applicable): not applicable

Intervention (if applicable): not applicable

Statistical Analysis

- Effect size calculated: expressed as percentage change for each individual study
- Variance-adjusted percentage changes: fixed effects model after unadjusted percentage

changes for each variable were calculated

Data Collection Summary:

Timing of Measurements: studies ranged from 2 to 16 wks in duration

Dependent Variables

- Changes in:
    - serum total cholesterol (TC)
    - HDL-cholesterol (HDL-C)
    - LDL-cholesterol (LDL-C)
    - serum triglyceride (TG)
    - body weight

Independent Variables

- Intake of non-soya pulses (e.g., navy, pinto, chickpea)

Control Variables

Description of Actual Data Sample:

Initial N: Number of studies identified not given.

Attrition (final N): N=11 studies included in analysis

Age: not mentioned

Ethnicity: not mentioned

Other relevant demographics:

Anthropometrics

Location: International studies

Summary of Results:

Key Findings

- Baseline cholesterol values in studies
    - cholesterol values in desirable range (< 5.2 mmol/L): 3 studies
    - cholesterol values in undesirably high range (5.2 - 6.2 mmol/L): 3 studies
    - cholesterol values in hypercholesterolemic range (> 6.2 mmol/L): 5 studies

- Changes in serum cholesterol
    - the unweighted reduction in serum cholesterol with intake of pulses = 7%
    - weighted reduction = 7.2%
    - 95% CI: 5.8% to -8.6%
    - range of reductions in cholesterol: 4.2 - 7.7 mmol/L

- Changes in serum LDL-C
    - variance-weighted reduction = 6.2%
    - 95% CI: -2.8% to -9.5%

- Changes in serum HDL-C
    - no effect of intake of pulses (2.6%; 95% CI: 6.3 to -1.0%)

- Changes in serum TG
    - unweighted reduction = 4%
    - variance-weighted reduction = 17%
    - 95% CI: -11.8% to -21.5%

Other Findings

- Changes in body weight were not significant (-0.9%; 95% CI: 2.2 to -4.1%).

Author Conclusion:

The hypocholesterolemic effects of pulses appear related to the following factors: soluble dietary fiber, vegetable protein, oligosaccharides, isoflavones, phospholipids and fatty acids, saponins and other factors. Regular intake of non-soya pulses is associated with a significant reduction in fasting cholesterol and LDL-C values, which may have important protective effects on risk for cardiovascular disease.

Reviewer Comments:

This article provided an excellent review and discussion of the literature and potential mechanisms. Given the articles that are included, it appears that certain criteria were used to select articles for inclusion; however, the methods used are not clear.

Research Design and Implementation Criteria Checklist: Review Articles

Relevance Questions

1.	Will the answer if true, have a direct bearing on the health of patients?	Yes
2.	Is the outcome or topic something that patients/clients/population groups would care about?	Yes
3.	Is the problem addressed in the review one that is relevant to nutrition or dietetics practice?	Yes
4.	Will the information, if true, require a change in practice?	Yes

Validity Questions

1.	Was the question for the review clearly focused and appropriate?	Yes
2.	Was the search strategy used to locate relevant studies comprehensive? Were the databases searched and the search termsused described?	No

3.	Were explicit methods used to select studies to include in the review? Were inclusion/exclusion criteria specified and appropriate? Were selection methods unbiased?	???
4.	Was there an appraisal of the quality and validity of studies included in the review? Were appraisal methods specified, appropriate, and reproducible?	???
5.	Were specific treatments/interventions/exposures described? Were treatments similar enough to be combined?	Yes
6.	Was the outcome of interest clearly indicated? Were other potential harms and benefits considered?	Yes
7.	Were processes for data abstraction, synthesis, and analysis described? Were they applied consistently across studies and groups? Was there appropriate use of qualitative and/or quantitative synthesis? Was variation in findings among studies analyzed? Were heterogeneity issued considered? If data from studies were aggregated for meta-analysis, was the procedure described?	Yes
8.	Are the results clearly presented in narrative and/or quantitative terms? If summary statistics are used, are levels of significance and/or confidence intervals included?	Yes
9.	Are conclusions supported by results with biases and limitations taken into consideration? Are limitations of the review identified and discussed?	Yes
10.	Was bias due to the review's funding or sponsorship unlikely?	Yes